

The DMAT Incident Management System

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Introduction

Are you familiar with incident management systems? If your background is not in fire fighting, you will probably answer “no”. Actually, it’s a trick question that should be rephrased. Have you ever worked in a system or organization that has a leader, operational objectives and an organizational structure that supports the objectives? The answer to this question is “yes”. Incident management (or incident command) is a system of terminology and organization that provides management tools to a Disaster Medical Assistance Team (DMAT). This system is very similar to the organization that you work with every day at your hospital, EMS agency or business.

History

In the 1970’s, California resources were severely taxed by major wildfire outbreaks. These incidents required the cooperation of multiple agencies that were not used to working together. Many agencies competed for supplies and equipment in a resource scarce environment. The California experience revealed several key findings:

- ❖ There was no clear cut leader or incident manager
- ❖ There was no basic organizational structure for chain of command and span of control
- ❖ There was no common terminology
- ❖ There was no communications system
- ❖ There was no system for allocating resources

A group of laid-off Boeing engineers were commissioned to develop a system that could resolve the major issues of coordination and resource allocation in a wildfire or disaster event. The resulting product was originally called the incident command system. In recent years the name has been changed to the incident management system or IMS. The change evolved because the word “management” is more descriptive of the system and its process as opposed to the word “command”.

The original system was designed for wildland fire operations, and was adopted in the 1980’s by the urban fire service. The evolution continued in the 1990’s when other agencies (including DMAT’s) realized that IMS could be used for any type of disaster. There are many examples of the flexibility of IMS. DMAT’s have used IMS in the following incidents:

1. Major hurricanes including, Andrew, Opal and Marilyn
2. Support of complex Florida wildfires
3. Preparedness and resources in the 1996 Atlanta Olympics
4. A meningitis outbreak

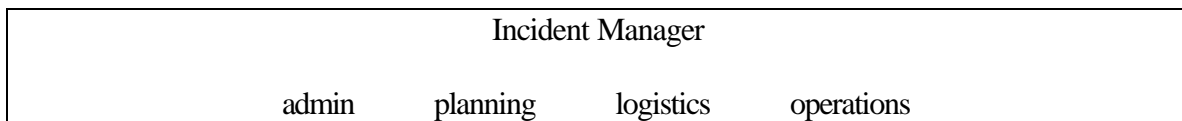
5. Major west coast earthquakes
6. The St. Louis Papal visit
7. The 1998 New York ice storm
8. Major flood events

In each case, IMS worked well. It provided a management boilerplate for diverse agencies such as fire, EMS, law enforcement, public works, American Red Cross, public health and of course DMAT's to work together. DMAT's from many states can now respond to a disaster, communicate with each other, and coordinate actions.

The Essence of IMS

The incident management system is based on five basic elements. There is an incident manager (with a management staff) that coordinates operations, logistics, planning and administration (admin).

The system is diagramed as follows:



- ❖ Incident Manager— responsible and accountable for all aspects of the incident or events, directly responsible for all sectors not delegated.
- ❖ Operations— coordinates the tactics and/or tasks needed to accomplish assigned objectives (in our case, medical care and public health)
- ❖ Logistics— support of all elements in the IMS such as equipment, supplies, communications, food/water, and facilities. (We need meds, beds, a place to sleep and food to eat)
- ❖ Planning— devises long and short term plans, maintains status boards, and tracks resources. (Planning tells us where we are and where we are going)
- ❖ Administration/finance— keeps workers' comp, personnel records, payroll and finance records. (Nobody appreciates admin until it's time to get paid or get reimbursed)

Think about it; the above system is just like a business or hospital organizational chart. The only difference is the terminology. There is a hospital administration and a management staff that runs the hospital (Incident Manager). There is support personnel that ensure you have supplies, the lights stay on, the air conditioning works, and there is food in the cafeteria (logistics section). Other people plan for the future, and track critical resources (planning section). Lastly, admin personnel keep records, purchase equipment and supplies, and cut your paychecks (administration/finance section).

The previous description is obvious. What is not obvious is that when a DMAT deploys on a C-130 to save lives, the hospital structure that is taken for granted doesn't

go with the team. The operations heroes that fly away still need management, planning, logistics and admin. The IMS is the answer; you can take it with you.

The Management Staff

The incident manager (DMAT Unit Commander) is responsible for all functions in the IMS that are not delegated. Because of staffing limitations in a DMAT deployment, the Incident Manager will have many functions in addition to directly supervising the team.

In a fully staffed IMS, the incident manager has a management staff. The management staff consists of a liaison officer, safety officer, and public information officer. The management staff duties are:

1. Liaison officer— point of contact for outside agencies; monitors operations to identify potential inter-organizational problems
2. Public information officer— responsible for the formulation and release of information to the media; organizes and conducts media briefings; coordinates media releases with the National Disaster Medical System, Office of Emergency Preparedness (NDMS/OEP) through the Medical Support Unit (MSU). Note: NDMS policy requires that media releases or briefings be coordinated through the MSU.
3. Safety officer— the safety officer monitors all facilities and operations to ensure safe procedures; *the safety officer has the authority to immediately halt any procedures, operations, or tasks that present a hazard to DMAT personnel.* (**Note:** The safety officer position is mandated by OSHA requirements.) A safety officer should be appointed at the pre-deployment stage. An incident manager should not attempt to perform safety officer functions.

The management staff is a luxury that is limited by staffing constraints. In reality, the DMAT commander can usually perform liaison and public information duties along with team management. As previously discussed, the safety officer must be a delegated responsibility.

Most deployments involve twenty-four hour operations. During night hours team responsibilities can be delegated to the operations chief. This allows sleep time for the DMAT Commander.

Operations Section

The operations functions of a DMAT is supervised by the operations section chief (often called ops). DMAT operations include triage, treatment, transport, public health, assessment of the medical infrastructure, medical outreach, mortuary operations, mental health, and sometimes veterinary care.

The operations section chief has a demanding position. The operations section must coordinate continuously with the incident manager and the logistics section. The operations section chief is responsible for staffing in treatment areas and coordinating outreach teams.

Some DMAT's assign operations responsibilities to the physician managing the treatment area. In other cases a separate ops chief is appointed. The choice depends on team preference and should depend on the incident management skills and personality of the qualified individuals who are available. (In other words, some physicians are good at operations management; some are not.)

Staffing in the operations section (medical treatment area) is often delegated to a head nurse that is familiar with staffing issues. Medical treatment areas usually operate on a twenty-four hour basis requiring an operations section chief for the day and night shifts.

The actual organization of medical units should be coordinated with the operations chief, head physician, and head nurse. Medical organization will vary considerably depending on the disaster and the assigned DMAT mission. These considerations involve a myriad of medical issues beyond the scope of this paper.

The Logistics Section

By definition disasters are resource scarce environments (a high demand low density logistics scenario). DMAT's usually consume supplies faster than they can be delivered. As a result, the logistics section chief is a mission critical position. (When we run out of stuff we're "dead in the water.")

The logistics section chief is responsible for the following:

- ❖ Communications unit - responsible establishing communications networks for tactical, regional, and long distance communications; tracks and maintains communications equipment
- ❖ Food/water unit - responsible for providing food and potable water for DMAT personnel
- ❖ Supply unit - responsible for ordering equipment, personnel, supplies, and medical supplies; stores supplies/equipment and maintains an inventory
- ❖ Facilities unit - responsible for the layout and operation of DMAT facilities

- ❖ Security unit - responsible for providing safeguards for the protection of DMAT personnel, facilities, and property from loss or damage
- ❖ Ground support unit - responsible for auxiliary power, transportation, fueling and maintenance of vehicles and equipment

The job of the logistics section chief begins days before a deployment and ends well after a deployment. This position should be a permanent team position with year-round responsibilities.

The logistics section chief must coordinate with the incident manager, the operations section chief, and the planning section chief. Additionally, the logistics section must maintain a continuous liaison with the Medical Support Unit (MSU) for supply and equipment ordering.

Unfortunately medical professionals do not fully appreciate the importance of logistics until they run out of supplies or food in a disaster. A team deployment requires at least one logistics person per five team members (rule of thumb). For example, a thirty person medical team will require at least six logistics personnel for a total of thirty-six team members. There are periods in a deployment when the entire team is involved in logistics functions such as mobilization, tent erecting, vehicle loading or unloading, and de-mobilization.

Firefighter EMT's and paramedics are excellent candidates for logistics positions. They have a good background in emergency incident management and understand logistics operations. They also have skills as mechanics, electricians, and carpenters. Firefighters also have an innate ability to "appropriate" supplies, vehicles, and amenities. (We never call it stealing.)

Logistics functions require twenty-four hour support. In most cases, the logistics section commits most of its staff to daytime operations. One logistics person may be satisfactory on a night shift. However, supplies and equipment often arrive at odd hours and may require a teamwide logistics effort.

DMAT Communications

In the IMS structure, the communications unit is assigned to the logistics section. There must be a communications specialist on duty during the team operations (day and night shift). Many team functions depend on effective communications. These functions include MSU coordination, coordination with local agencies, supply ordering, EMS transport functions (air and ground), and internal team coordination. A communications specialist must perform minor repairs, track equipment, charge batteries and maintain appropriate networks for paging and voice/data communications. The communications unit also maintains and updates the Incident Communications Plan (ICS form 205).

The Planning Section

The planning section chief is responsible for the collection, evaluation, dissemination and use of information about the development of the incident. The planning section tracks all resources utilized by the DMAT and displays critical information regarding the status of the incident.

The planning section chief coordinates with the incident manager (DMAT unit commander) and the other section chiefs in the preparation of the daily incident action plan (IAP). The IAP is a written document that utilizes ICS Form 201 - Incident Briefing as a basic template and includes all ICS forms written for the particular incident. The planning section also maintains Organization Assignment List (ICS Form 203) and the Incident Organization Chart (ICS Form 207).

An important duty of the planning section chief is the planning of the daily incident action plan briefing. The management staff, section chiefs, and sector supervisors should attend the briefing. The daily briefing consists of strategy and missions, weather, safety issues, and any relevant information relating to the team activity for the briefing cycle. On certain incidents, a twelve hour briefing cycle (Oklahoma City was an example). The units in the planning section are as follows:

- ❖ Resources unit— maintains check-in list of all resources; prepares and maintains all resource status information by using Resource Status Cards (ICS Form 219 called “T” cards)
- ❖ Situation Unit— collects and organizes situational information such as weather, personnel assignments, strike teams, and task forces; maintains display boards of key information such as weather, safety issues, shift schedule, etc.
- ❖ Document unit— maintains and stores all forms, paperwork, documents/ files relating to the incident and provides duplication services
- ❖ Demobilization unit— assists the incident manager and the logistics section chief in the development of the team demobilization plan and checkout procedures.
- ❖ Technical advisor- individual(s) with special knowledge or expertise relating to the incident (ex. Epidemiologist, weather specialist, etc.)

Few DMAT's will have the personnel to staff the units in the planning section. Most incidents will not demand full time staffing for the above functions. As a matter of practicality, a single planning section chief is usually assigned to perform the planning section duties required by a DMAT.

In cases of severe personnel shortages, the DMAT unit commander must perform the planning duties. (This is the case with most deployments). This is why the DMAT unit commander is a very busy person during a deployment.

The Administration/Finance Section

In any discussion about incident management the subject of administration/finance (admin) is the least exciting. However, bad administration can haunt a DMAT Commander months or years after a deployment.

The Admin Section Chief is responsible for the maintenance of all records and files relating to a deployment. The responsibilities of the admin section include:

- ❖ Time Unit— recording the dates and hours worked by all team members, and the submissions of these records for payment
- ❖ Compensation Claims Unit— responsible for recording and submitting workmen's compensation claims for DMAT members or other claims relating to a deployment
- ❖ Cost Unit— responsible for collecting all cost data and providing cost estimates
- ❖ Procurement Unit— responsible for administering all financial matters pertaining to all vendor contracts

The ideal individual for the position of Admin Section Chief is the DMAT Administrative Officer, or a designee that is familiar with DMAT and NDMS admin procedures. In cases of minimum staffing, the Incident Manager can assume the admin responsibilities. However, this is a last resort because the Incident Manager is usually highly tasked with management and tactical responsibilities.

IMS Staffing Issues

Where do we get the people to staff the various IMS positions? This is a valid question, especially when a DMAT deploys with less than thirty people and tries to operate a two-shift system every twenty-four hours. Three important concepts must be remembered:

1. The units described in the previous pages may be used only when needed.
2. The IMS units are *functions*, not *people*. Team personnel can perform more than one function.
3. *The Incident Manager automatically assumes all duties not assigned.* (This is a benchmark IMS rule) Incident Managers (DMAT Unit Commanders) need to be creative in delegation.

Medical Support Unit (MSU)

The medical support unit (MSU) is the medical branch of a regional operations center. The MSU exists to support the medical treatment and public health operations during a disaster. All DMAT mission assignments, logistics support and de-mobilization is coordinated by the MSU.

In disaster operations, the MSU should be fully staffed using the IMS boilerplate. This requires a full management staff, with fully staffed sections (admin, planning, logistics, and operations). The DMAT teams performing medical missions are assigned to the MST operations section

The DMAT Unit Commander coordinates with an assigned point of contact at the MSU. Likewise, the MSU directly coordinates with the DMAT Unit Commander (not the DMAT section chiefs). This procedure ensures a single point of contact at each end of the chain of command.

As an example, consider a scenario where a DMAT begins to run low on Insulin. The treatment sector notifies the DMAT logistics section to order more Insulin. If the DMAT logistics section cannot fill the order, the Unit Commander is notified and Insulin is added to the supply list. The supply request is communicated to the MSU point of contact. This supply order would also be tracked by the DMAT planning section (resource unit).

Communication with the MSU is very important because the MSU is often at a remote site. The DMAT communications unit should attempt to establish at least a primary and secondary communications link and document all messages.

Note to Readers: *The term “MSU” is not standard IMS terminology. The MSU is actually a medical branch in the operations section of the disaster incident management organizational structure. The term MSU has no meaning outside the NDMS sphere.*

The Principle of Divisions:

In a disaster management system, the concept of span of control is important. Span of control is the number of people that a single supervisor can successfully manage and coordinate. Business management texts suggest five to seven people as an effective span of control. In disaster operations, three or four people is a realistic span of control.

For example, in a regional disaster with three DMAT's, the operations section in the MSU would coordinate with three DMAT's (a span of control of three). If medical operations expanded to six DMAT's, the span of control is too wide. In this case, the incident is divided into two divisions: division A and division B. Three DMAT's are assigned to each division. Now the MSU operations section chief is managing two

division leaders (Divisions A and B). The division leaders each manage three DMAT's. At each layer, the span of control is three or less.

A division is defined as a unit of operation designed to divide an area into geographical sectors. Divisions can be designated by a letter (A,B,C, etc.) or be named (St. Thomas division or south division).

Readers note: *The urban fire service often refers to divisions as “sectors”. The word “sector” is acceptable IMS terminology.*

The division concept is also important at the DMAT level. A team may be assigned to operate at more than one location. To maintain organization, the separate locations are each designated as a division. Medical operations are almost always divided into a triage sector, treatment sector and transport sector. (Remember that divisions and sectors are interchangeable).

Strike Teams and Task Forces

Strike teams and task forces are organizational tools that provide flexibility when a DMAT is assigned multiple missions. A strike team is a specified combination of the same type of resources with common communications and a leader. A five person medical team is an example of a strike team. A task force is a specified combination of unlike resources with common communications and a leader. A task force example is three DMAT members, an EMS unit, and a law enforcement unit assigned to work as a unified group.

The following examples demonstrate the use of strike teams or task forces:

1. A DMAT is deployed for medical treatment operations. The MSU requests a medical needs assessment at a distant location. The DMAT Unit Commander identifies an assessment strike team and assigns the mission.
2. During DMAT operations, information is received about a large number of possible patients at an impromptu shelter in Jones High School. A task force is assigned consisting of two DMAT paramedics, one DMAT nurse, a fire/rescue unit, and a security officer.
3. The task force at Jones High School reports that there is a significant and long-term medical mission. The DMAT Unit Commander assigns additional personnel to supplement the task force and establishes a division (called Jones Division).

In Summary, task forces and strike teams are formed or broken down as dictated by the mission. Task force/strike team assignments can be short, or grow into a division.

IMS Forms

A common belief in disaster operations is that forms and paperwork are not important because we are too busy. IMS forms are an exception. The national incident management system is based on a series of practical scene management forms. (Many of these forms are generic. Some are specific to the wildland fire fighting community but are easily adapted for DMAT use.) The forms are very useful as a tactical checklist. Key items in the forms that are blank trigger a warning to on-scene managers to get the proper answers. For example, the Incident Objectives Form (202 ICS) requires a weather forecast and safety objectives. The forms serve as an excellent guideline for preparing an incident action plan and daily briefing. The forms also serve as a source of archived information for financial reports and after-action reports. (See case study)

IMS forms are brief, concise and can be filled out in a manner of minutes by the appropriate section chief or unit leader. IMS forms can be downloaded (Adobe format) at <http://www.nwcg.gov/pms/forms/icsforms.htm> The printed forms can also be ordered for nominal cost from:

National Interagency Fire Center

National Wildfire Coordinating Group
Catalog Part 2: Publications (NFES #3362)
Great Basin Cache Supply Office
3833 S. Development Avenue
Boise, ID. 83705

The forms most applicable to DMAT operations are:

1. ICS 201 - Incident Briefing NFES 1325
2. ICS 202 - Incident Objectives NFES 1326
3. ICS 203 - Incident Assignment List NFES 1327
4. ICS 204 - Division Assignment NFES 1328
5. ICS 205 - Incident Communications Plan NFES 1330
6. ICS 206 - Medical Plan NFES 1331
7. ICS 207 - Organization Chart NFES 1332
8. ICS 211 - Check-in List NFES 1335
9. ICS 214 - Unit Log NFES 1337
10. ICS 215A - Incident Safety Analysis NFES 2221
11. ICS 220 - Air Ops Summary NFES 1351

CASE STUDY

On September 22, 1995, the Gulf Coast DMAT (FL-1) deployed to the Hurricane Marilyn disaster in St. Thomas, Virgin Islands. The medical infrastructure, including St. Thomas Hospital was severely damaged. The Gulf Coast DMAT, along with the Tulsa DMAT, relieved the Toledo and Boston DMATs.

The primary mission was to provide triage and medical care in place of the hospital emergency department. The medical facilities were three treatment tents; triage/primary care, pediatric, and trauma. The DMATs operated on a two-shift (twelve hours) schedule. The patient workload was approximately 150 patients per day.

On September 25 (mission day three), the medical support unit (MSU) assigned additional tasking as follows:

1. EMS reported a significant number of medical calls at the FEMA disaster field office (St. Thomas High School). The assigned mission was to provide basic care and medical screening at the school.
2. The MSU had received information about the need for medical care in the town of TuTu (ten miles from St. Thomas). The DMAT was assigned to conduct a medical needs assessment in the TuTu area.

The DMAT Unit Commander utilized several solutions that were available in the IMS "toolbox." The following actions were taken:

- Two medical assessment strike teams were formed and designated as "high school" and "TuTu."
- The TuTu team consisted of a Physician's Assistant, Registered Nurse, and two Paramedics.
- The high school team consisted of a Registered Nurse, and two Paramedics.
- The planning section incorporated the assignments in the daily incident action plan (IAP), tracked the teams via the resource unit, and displayed relevant information through the situation unit.
- The logistics section appropriated transportation vehicles. The communications unit assigned frequencies and hardware to the strike teams.
- Both teams were instructed to perform a medical needs assessment and report their findings.

The high school strike team reported that people at the disaster field office required some medical screening and primary care. The patient load was light, but steady. A consensus decision was made to place a strike team at the high school during daylight hours. Logistics was not a major concern; the team could deploy each morning with the required medical supplies.

The TuTu team reported a bigger problem. The entire town had been without medical care since the storm began. A fully staffed treatment area was established. The TuTu operations required a tent facility with robust logistics requirements. Security was also required on the site along with communications. TuTu became the "TuTu division,"

with a Physician, two Registered Nurses, Two Paramedics, one EMT, a communications unit, security unit, supply unit, and a ground support unit.

In summary, the mission had expanded in complexity from a single treatment area to a treatment area, a division, and a strike team. The unit commander efficiently utilized the following IMS concepts:

- Chain of command
- Delegation
- Span of control
- Strike Teams
- Operations division
- Logistics (communications, supply, ground support, security)
- Planning (IAP, situation unit, resource unit)

GLOSSARY

1. Administration/finance section— keeps workers' comp, personnel records, payroll and finance records; supervises all units in the administration/finance section.
2. Communications unit - responsible establishing communications networks for tactical, regional, and long distance communications; tracks and maintains communications equipment.
3. Compensation /claims Unit— responsible for recording and submitting workmen's compensation claims for DMAT members or other claims relating to a deployment.
4. Cost Unit— responsible for collecting all cost data and providing cost estimates.
5. Demobilization unit— assists the incident manager and the logistics section chief in the development of the team demobilization plan and checkout procedures.
6. Division - unit of operation designed to divide an area into geographical sectors; called a sector in urban fire service terminology.
7. Document unit— maintains and stores incident files and provides duplication services.
8. Facilities unit - responsible for the layout and operation of DMAT facilities.
9. Food/water unit - responsible for determining food and potable water requirements for DMAT personnel.
10. Ground support unit - responsible for auxiliary power, transportation, fueling and maintenance of vehicles and equipment.
11. Incident command system - see incident management.
12. Incident management (or incident command) is a system of terminology and organization that provides management tools to a DMAT.
13. Incident Manager— responsible and accountable for all aspects of the incident or events, directly responsible for all sectors not delegated.
14. Information officer— responsible for the formulation and release of information to the media; organizes and conducts media briefings; coordinates media releases with NDMS/OEP through the Medical Support Unit (MSU).
15. Liaison officer— point of contact for outside agencies; monitors operations to identify potential inter-organizational problems.

16. Logistics section— support of all elements in the IMS such as equipment, supplies, communications, food/water, and facilities; supervises all units in the logistics section.
17. Management staff - directly supports the incident manager; consists of a liaison officer, safety officer, and public information officer.
18. Medical support unit (MSU) - medical branch of a regional operations center; exists to support the medical and public health divisions during disaster operations.
19. Operations section — the tactics and/or tasks needed to accomplish assigned objectives for medical care and public health; supervises all units in the operations section.
20. Planning section — devises long and short term plans, maintains status boards, and tracks resources; supervises all units in the planning section.
21. Procurement Unit— responsible for administering all financial matters pertaining to all vendor contracts.
22. Resources unit— maintains check-in list of all resources; prepares and maintains all resource status information by using Resource Status Cards (ICS Form 219 called “T” cards).
23. Safety officer— the safety officer monitors all facilities and operations to ensure safe procedures; *the safety officer has the authority to immediately halt any procedures, operations, or tasks that present a hazard to DMAT personnel.*
24. Security unit - responsible for providing safeguards for the protection of DMAT personnel, facilities, and property from loss or damage.
25. Situation Unit— collects and organizes situation information; maintains display boards of key information such as weather, safety issues, shift schedule, etc.
26. Span of control - number of people that a single supervisor can successfully manage and coordinate.
27. Strike team - a specified combination of the same type of resources with common communications and a leader.
28. Supply unit - responsible for ordering equipment, personnel, supplies, and medical supplies; stores supplies/equipment and maintains an inventory.
29. Task force - a specified combination of unlike resources with common communications and a leader.
30. Technical advisor- individual(s) with special knowledge or expertise relating to the incident (ex. Epidemiologist, weather specialist, etc.).
31. Time Unit— recording the dates and hours worked by all team members, and the submissions of these records for payment.
32. Unit Commander - the incident commander of a DMAT; responsible for the supervision of the operations section, logistics section, planning section, administration/finance section, and management staff; directly responsible for all IMS functions not delegated.

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